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wherein "a" may be the same or different and represents any amino acid residue, the numerical subscript on each "a" represents its position in the amino acid sequence and "C" represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests.

REMARKS

The Office Communication states that the sequence identifiers are missing from certain pages in the Specification. In order to comply with the requirements of 37 C.F.R. §1.821-825, the peptide sequence,

"XXCXXXXXXXXXXCXXXXCXXCXXXXXXXXXXCXXXXXCXCXXC"

has been added in the Sequence Listing as SED ID NO: 62 and the sequence identifier number has been inserted at various places as indicated in this Amendment. The Examiner is advised that the symbol "a" has been represented as "x" in the Sequence Listing. This Preliminary Amendment is submitted to add the sequence identifier numbers only and thus does not constitute the addition of new matter.

CONCLUSION

It is believed that no fee is due with the submission of this Amendment. If this is incorrect, however, please charge any required fee and the fee for any extension of time needed to Deposit Account No. 07-1969.

Respectfully submitted,



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Marked Changes
10/072,809
Amendment 1/13/03

In the Claims:

2. (Once amended) The isolated nucleic acid molecule of Claim 1 wherein the polypeptide comprises in its mature domain cysteine residues in the following locations:

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇[a₈]a₂₈
a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue and the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

26. (Once amended) A method for generating a plant with increased or enhanced resistance to a plant pest, said method comprising introducing into the genome of a plant cell or genome of a group of plant cells a genetic construct comprising a promoter or functional equivalent thereof operably linked to a nucleotide sequence encoding a floral-derived, defensin-like molecule having a mature domain comprising the amino acid sequence:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇[a₈]a₂₈
a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its

Roman numeral and wherein said mature domain exhibits inhibitory activity against plant pests such as insect pests and regenerating a plant from said cell or group of cells.

32. (Once amended) The transfected or transformed cell, tissue or organ of Claim 31 wherein the polypeptide comprises a mature domain having the structure:

$a_1a_2C_Ia_3a_4a_5a_6a_7a_8a_9a_{10}a_{11}a_{12}C_{II}a_{13}a_{14}a_{15}a_{16}a_{17}C_{III}a_{18}a_{19}a_{20}C_{IV}a_{21}a_{22}a_{23}a_{24}a_{25}a_{26}a_{27}[a_8] \underline{a_{28}}$
 $a_{29}C_{Va}a_{30}a_{31}a_{32}a_{33}a_{34}a_{35}C_{VI}a_{36}C_{VII}a_{37}a_{38}a_{39}C_{VIII}$ (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests.

39. (Once amended) The isolated polypeptide of Claim 38 wherein the polypeptide comprises in its mature domain cystein residues in the following locations:-

$a_1a_2C_Ia_3a_4a_5a_6a_7a_8a_9a_{10}a_{11}a_{12}C_{II}a_{13}a_{14}a_{15}a_{16}a_{17}C_{III}a_{18}a_{19}a_{20}C_{IV}a_{21}a_{22}a_{23}a_{24}a_{25}a_{26}a_{27}[a_8] \underline{a_{28}}$
 $a_{29}C_{Va}a_{30}a_{31}a_{32}a_{33}a_{34}a_{35}C_{VI}a_{36}C_{VII}a_{37}a_{38}a_{39}C_{VIII}$ (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue and the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

In the Specification:

3rd paragraph on page 5, lines 13-26:

Another aspect of the present invention is directed to an isolated nucleic acid

molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced during flower development and its mature domain comprises the structure:

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

4th paragraph on page 5 starting at line 28 to page 6, line 11:

A further aspect of the present invention contemplates an isolated nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced in the epidermal layers of petals and sepals, the cortical cells of the style and the connective tissue of the anthers and its mature domain comprises the structure:

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

3rd paragraph, starting from page 6, line 23, to page 7, line 4:

Still a further aspect of the present invention provides a genetic construct comprising a promoter or functional equivalent thereof operably linked to a nucleotide sequence encoding a floral-derived, defensin-like molecule having a mature domain comprising the amino acid sequence:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein said mature domain exhibits inhibitory activity against plant pests such as insect pests with the proviso that the defensin-like molecule is not FST or TPP3.

2nd paragraph on page 16, lines 16 to 31:

Yet another aspect of the present invention provides a method for generating a plant with increased or enhanced resistance to an insect, said method comprising introducing into the genome of a plant cell or genome of a group of plant cells a genetic construct comprising a promoter or functional equivalent thereof operably linked to a nucleotide sequence encoding a defensin-like molecule having a mature domain comprising the amino acid sequence:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and

“C” represents a cysteine residue at a position indicated by its Roman numeral and wherein said mature domain exhibits inhibitory activity against plant pests such as insect pests and regenerating a plant from said cell or group of cells.

2nd paragraph on page 17, lines 10-22:

Even still another aspect of the present invention is directed to the nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced during flower development and its mature domain comprises the structure:

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests.

3rd paragraph on page 21, lines 21-31:

Figure 9 is an alignment of the amino acid sequence of NaPdf1 (SEQ ID NO: 18) with the predicted amino acid sequences encoded from five other flower-derived cDNA clones, as follows:

FST (SEQ ID NO: 20)

(flower specific thionin): Gu *et al.*, *Mol. Gen. Genet.* 234: 89-96, 1992;

TPP3: (SEQ ID NO: 21) Milligan and Gasser, *Plant Mol. Biol.* 28: 691-711, 1995;

NTS13: (SEQ ID NO: 22) Li and Gray, *Plant Physiology* 120: 633, 1999;

PPT: (SEQ ID NO: 23) Karunanandaa *et al.*, *Plant Mol. Biol.*, 26: 459-464, 1994;
 ATPIIIa: (SEQ ID NO: 24) Yu *et al.*, Direct Submission, Accession No. S30578, 1999.

Some, but not all floral defensins have a C-terminal acidic domain of 32-33 amino acids.

4th paragraph on page 30, lines 20-30:

Reference herein to a “polypeptide” includes reference to a peptide or protein. Generally, the polypeptide comprises cysteine residues, the location of which is conserved within members of floral and non-floral-derived defensin molecules. The location of the eight cysteine residues may be defined as follows:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral.

1st paragraph on page 31, lines 1-14:

Accordingly, another aspect of the present invention is directed to an isolated nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced during flower development and its mature domain comprises the structure:

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a

25a26a27a28a29Cva30a31a32a33a34a35Cv1a36CvIIa37a38a39CvIII (SEQ ID NO:
62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

3rd paragraph on page 32, lines 17-31:

Accordingly, another aspect of the present invention contemplates an isolated nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced in the epidermal layers of petals and sepals, the cortical cells of the style and connective tissue of the anthers and its mature domain comprises the structure:

a1a2C1a3a4a5a6a7a8a9a10a11a12CIIa13a14a15a16a17CIIIa18a19a20CIVa21a22a23a24a
25a26a27a28a29Cva30a31a32a33a34a35Cv1a36CvIIa37a38a39CvIII (SEQ ID NO:
62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests with the proviso that the polypeptide is not FST or TPP3.

4th paragraph on page 37, lines 11-23:

Accordingly, another aspect of the present invention provides a genetic construct comprising a promoter or functional equivalent thereof operably linked to a nucleotide sequence encoding a floral-derived, defensin-like molecule having a mature domain comprising the amino acid sequence:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein said mature domain exhibits inhibitory activity against plant pests such as insect pests with the proviso that the defensin-like molecule is not FST or TPP3.

2nd paragraph on page 46, lines 5-20:

The present invention further contemplates a method for generating a plant with increased or enhanced resistance to a plant pest, said method comprising introducing into the genome of a plant cell or genome of a group of plant cells a genetic construct comprising a promoter or functional equivalent thereof operably linked to a nucleotide sequence encoding a floral-derived, defensin-like molecule having a mature domain comprising the amino acid sequence:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and

wherein said mature domain exhibits inhibitory activity against plant pests such as insect pests and regenerating a plant from said cell or group of cells. In one aspect, this embodiment does not extend to defensin-like molecules FST and TPP3.

3rd paragraph on page 48, lines 8-22:

Yet another aspect of the present invention provides a method for generating a plant with increased or enhanced resistance to an insect, said method comprising introducing into the genome of a plant cell or genome of a group of plant cells a genetic construct comprising a promoter or functional equivalent thereof operably linked to a nucleotide sequence encoding a defensin-like molecule having a mature domain comprising the amino acid sequence:-

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein said mature domain exhibits inhibitory activity against plant pests such as insect pests and regenerating a plant from said cell or group of cells.

4th paragraph on page 57, starting at line 21 and ending on page 58, line 2:

Preferably, the nucleic acid molecule comprises a sequence of nucleotides encoding or complementary to a sequence encoding a polypeptide comprising, in its precursor form, an N-terminal signal domain, a mature domain and an acidic C-terminal domain wherein said polypeptide is produced during flower development and its mature domain comprises the structure:

a₁a₂C_Ia₃a₄a₅a₆a₇a₈a₉a₁₀a₁₁a₁₂C_{II}a₁₃a₁₄a₁₅a₁₆a₁₇C_{III}a₁₈a₁₉a₂₀C_{IV}a₂₁a₂₂a₂₃a₂₄a₂₅a₂₆a₂₇a₂₈a₂₉C_Va₃₀a₃₁a₃₂a₃₃a₃₄a₃₅C_{VI}a₃₆C_{VII}a₃₇a₃₈a₃₉C_{VIII} (SEQ ID NO: 62)

wherein “a” may be the same or different and represents any amino acid residue, the numerical subscript on each “a” represents its position in the amino acid sequence and “C” represents a cysteine residue at a position indicated by its Roman numeral and wherein the mature domain has activity against one or more plant pests.